NEUTRON INELASTIC SCATTERING STUDIES FOR LEAD-204*

by

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ABSTRACT

A 9.57-g sample of lead metal, enriched to 99.7% ^{204}Pb, has been used in an investigation of neutron inelastic scattering from this rare isotope at the Argonne National Laboratory Fast-Neutron Generator Facility. Neutron excitation of the 66.9-m isomeric state at 2.186 MeV in ^{204}Pb has been measured from near threshold to $\sim$10 MeV using activation techniques. Cross sections and a value for the isomeric half life have been derived from these data. Time-of-flight techniques were employed to measure spectra of promptly-emitted gamma rays from the ^{204}Pb(n;n',γ)^{204}Pb reaction at neutron energies $\leq$3 MeV. Cross sections and angular distributions have been derived from these data for several of the stronger transitions. Other available fast-neutron data for this isotope are reviewed briefly in this report.

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